UIC School of Public Health Student Handbook 2006-2007

MS Degree Requirements for the Community Health Sciences Division

In addition to the general program requirements of the Graduate College and School of Public Health, Community Health Sciences requires the following. Students should also refer to the CHS Student Handbook.

- MS students in Community Health Sciences must complete all of the SPH requirements for the MS degree. However, rather than EPID 400, students must take EPID 403. In addition, students must take CHSC 400 and select either HPA 400, EOHS 400 or CHSC 401.

MS Degree Requirements for the Environmental and Occupational Health Sciences Division

MS CORE • DIVISION CORE • ELECTIVES • CAPSTONE REQUIREMENT • ADDITIONAL REQUIREMENTS FOR ABET PROGRAM

MS Core

EPID 403 Introduction to Epidemiology: Principles and Methods (3 sh)

BSTT 400 Biostatistics I (3 sh)

BSTT 401 Biostatistics II (4 sh)

Sub-total 10 sh

Division Core

All students are required to take a minimum of 12 sh in EOHS courses, choosing at least one course in each of the following three areas:

Exposure Assessment and Measurement

EOHS 405 Environmental Calculations (2 sh)

EOHS 440 Chemistry for Environmental Professionals (3 sh)

EOHS 421 Fundamentals of Industrial Hygiene (2 sh)

EOHS 418 Analysis of Water and Wastewater Quality (2 sh)

EOHS 428 Industrial Hygiene Laboratory I (2 sh)

EOHS 438 Air Quality Laboratory (2 sh)

EOHS 542 Water Chemistry (3 sh)

EOHS 543 Environmental Organic Chemistry (3 sh)

EOHS 557 Design and Analysis of Experiments (4 sh)

EOHS 564 Geographic Information System Applications in Public Health (3 sh)

EOHS 565 - Datamining Applications in Public Health (3 sh)

Health Assessment

EOHS 450 Principles of Occupational/Environmental Medicine (2 sh)

EOHS 455 Environmental and Occupational Toxicology (3 sh)

EOHS 495 Environmental/Occupational Health Seminar (1 sh)

EOHS 551 Occupational Diseases (4 sh)

EOHS 554 Occupational and Environmental Epidemiology (2 sh)

EOHS 555 Advanced Toxicology (3 sh)

Intervention Strategies

EOHS 408 Biological, Chemical, Explosives, and Nuclear Weapons as Public Health Threats (3 sh)

EOHS 411 Water Quality Management I (4 sh)

EOHS 431 Air Quality Management I (3 sh)

EOHS 461 Community Health and Consumer Protection (2 sh)

EOHS 482 Occupational Safety Science (2 sh)

EOHS 556 Risk Assessment in Environmental and Occupational Health (3 sh)

EOHS 572 Environmental Risk Management (4 sh)

Sub-total 12 sh

Electives

Students should select courses with their advisor in a discipline of interest.

At least 9 sh of coursework in the student's discipline must be at the 500 level.

Sub-total 10 sh

Capstone Requirement

A capstone experience is required of all students in EOHS. For students in the MS program, the capstone experience is the MS research (IPHS 598) and written thesis.

Sub-total 16 sh

Program Total: 48 sh

Additional Requirements for Students Enrolled in Applied Science Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc. (ASAC-ABET) - Accredited Industrial Hygiene Program

ASAC-ABET - Accredited MS Program in Industrial Hygiene

Additional Requirements (if not selected to meet divisional core requirements)

EOHS 405 Environmental Calculations (2 sh)

EOHS 421 Fundamentals of Industrial Hygiene (2 sh)

EOHS 428 Industrial Hygiene Lab I (2 sh)

EOHS 431 Air Quality Management I (3 sh)

EOHS 438 Air Quality Lab (2 sh)

EOHS 424 Environmental Acoustics (2 sh)

EOHS 482 Occupational Safety Science (2 sh)

EOHS 529 Industrial Hygiene Lab II (2 sh)

EOHS 523 Engineering Controls/Industrial Ventilation (4 sh)

EOHS 570 Hazardous Materials Management (3 sh)

EOHS 584 Radiation Protection (3 sh)

Either EOHS 455 Environmental and Occupational Toxicology (3 sh)

And EOHS 554 Occupational and Environmental Epidemiology (2 sh)

Or EOHS 551 Occupational and Environmental Diseases (4 sh)

Sub-total (divisional core and additional requirements) 32-44 sh

Program Total: 56 sh

Research:

IPHS 598 Research in Public Health Sciences 16 sh

Program Total: 58 sh

Trainees are also expected to:

- Attend interdisciplinary seminar
- Attend Occupational Medicine Clinic (on a rotating basis this usually works out to once/3 weeks)
- Take the 40-hour hazardous waste worker training course during the 2 years in the program
- Participate in at least one extended field test

Prerequisites for entering the HSAT program are a full year of general chemistry, at least one semester of organic chemistry, mathematics through differential and integral calculus, and a course in human physiology.

MS Degree Requirements for the Epidemiology and Biostatistics Division

EPIDEMIOLOGY • BIOSTATISTICS

Epidemiology

Minimum credit hour requirement: 50 semester hours

Required Courses:

SPH Core Courses (6 semester hours)

BSTT 400 Biostatistics I (3 sh)

EPID 403 Introduction to Epidemiology: Principles and Methods (3 sh)

Epidemiology Requirements (16-17 semester hours)

EPID 406 Epidemiologic Computing (3 sh)

EPID 404 Intermediate Epidemiologic Methods (4 sh)

EPID 410 Epidemiology of Infectious Diseases (2 sh)

EPID 411 Epidemiology of Chronic Disease (3 sh)

EPID 591 Current Epidemiologic Literature (2 sh)

EPID 595 Research Seminar (1 sh)

BSTT 401 Biostatistics II (4 sh)

Choose one:

BSTT 402 Survival Analysis and Logistic Regression (2 sh)

-or-

BSTT 430 Design of Clinical Trials (3 sh)

-or-

BSTT 440 Sampling and Estimation Methods (3 sh)

Electives (20 semester hours)

Epidemiology Courses (13 sh)

- At least 7 semester hours of these must be at the 500 level

Other Electives (7 sh)

- At least 3 semester hours should be one of the following: EOHS 400, CHSC 400, CHSC 401 or HPA 400

Thesis Research (8 semester hours)

IPHS 598 Research in the Public Health Sciences - MS

Program Total: 50-51 sh

Any specific course requirement may be waived on the basis of previous course work or experience. Please refer to the section on Academic Policies and Standards for course waiver rules and procedures.

Standards of Performance for Epidemiology MS Program

Epidemiology majors must achieve a grade of A or B in epidemiology and biostatistics courses. If a grade below "B" is achieved in such a course, it may be repeated once. Failure to maintain this standard will be grounds for dismissal from the epidemiology program.

Research in the Public Health Sciences - MS (IPHS 598)

The MS Dissertation in Epidemiology at UIC SPH is intended to prepare the student to conduct epidemiology studies as a part of a research team. The thesis process involves a) developing a thesis proposal in conjunction with a thesis advisor and committee, and b) completion of the research, writing, and defense of the dissertation. With the assistance of the advisor, the student should select appropriate faculty for his/her thesis committee. The committee must be comprised of three members at a minimum, with at least one member a tenured faculty. The members of the thesis committee will meet with the student to approve the thesis proposal, and to determine that the student is adequately prepared to undertake it.

The student may generate his or her own research hypothesis or work with a faculty member who outlines a research hypothesis. The use of existing data to test a hypothesis

using standard epidemiological study designs and analytic techniques is recommended. However, other formats (e.g. descriptive studies and studies with limited field work), may be acceptable. It is anticipated that the thesis results will be suitable for publication in a peer reviewed scientific journal.

IRB: Institutional Review Board

All students must undergo Institutional Review Board (IRB) training and training on the protection of health data by the end of their first year of study. For research involving human subjects, students must submit IRB review or exemption forms prior to beginning their research. Students should consult the SPH Student Reference Guides available in the division, and speak with their advisors. Research involving human subjects cannot be undertaken without first obtaining IRB review or exemption.

Note: The written and defended thesis is required for submission mid-semester. Students are recommended to plan their program completion and graduation accordingly.

Additional MS learning objectives for students in epidemiology:

1. Demonstrate the ability to develop a scientific framework for problem conceptualization, study design, concepts of bias and causality.
2. Demonstrate critical reading skills and the ability to synthesize epidemiological and related biological science information into testable hypotheses.
3. Be able to develop appropriate study designs, control sources of error, conduct data analyses, and interpret results.
4. Be able to manage and analyze data using statistical and epidemiological software packages.

Biostatistics

Minimum credit hour requirement: 48 semester hours

Note: Biostatistics students should **not** take BSTT 400 or EPID 400 as an SPH course requirement. EPID 403, Introduction to Epidemiology: Principles and Methods (3 sh) is the required SPH core course.

Required Courses

EPID 403 Introduction to Epidemiology: Principles and Methods (3 sh)

BSTT 502 Applied Biostatistics I (4 sh)

BSTT 504 Applied Biostatistics II (4 sh)

BSTT 512 Survival Analysis (3 sh)

BSTT 511 Categorical Data Analysis (3 sh)

STAT 401 Introduction to Probability (4 sh)

STAT 411 Statistical Theory (4 sh)

BSTT 440 Applied Sampling (3 sh) -OR- BSTT 430 Clinical Trials (3 sh)

BSTT 503 Biostatistics Tools (2 sh)

BSTT 513 Longitudinal Data Analysis (4 sh)

BSTT 514 Biostatistical Consulting (2 sh)

BSTT 522 Biostatistical Investigations (4 sh)

Electives (minimum requirement) 8 sh

Electives: At least one elective course must be selected from the SPH core courses not given in the Epidemiology and Biostatistics Division: CHSC 400, CHSC 401, EOHS 400, or HPA 400. BSTT 400, 401, 402 and 410 are not acceptable as MS electives.

Additional Schoolwide Requirements

Investigator 101 – What Researchers Need to Know Before Research Can Start

HIPAA Research 101

Standards of Performance for Biostatistics MS Program

Biostatistics majors are allowed only one grade of C in required courses. A student who receives two Cs in required courses will not be allowed to graduate from the program. A student may re-take a course one time and attempt to replace the C with a higher grade; however it should be noted that nearly all of the courses required for the MS in Biostatistics are offered only once a year and must be taken in a particular sequence, so re-taking a course is likely to delay graduation by a full year.

MS Comprehensive Examination

All MS students in biostatistics take a comprehensive exam at the end of their second program year. This exam consists of two parts. The first part, a three-hour written exam, will cover basic methodological material from the required biostatistics and mathematics courses. The second part will be a seven day take-home exam in which the student is tested on the ability to perform data analysis and to describe and discuss the results.

Additional MS learning objectives for students in biostatistics:

1. Be able to apply biostatistical methods to public health problems, most particularly epidemiologic problems, and understand the rationale and assumptions underlying these methods.
2. Develop the ability to manage data files on the computer and to analyze data using the major statistical packages.
3. Demonstrate the ability to recognize the appropriate research design and perform appropriate statistical analyses in a consulting role.

MS Degree Requirements for the Health Policy and Administration Division

MS Concentration in Clinical Research

Overview

The concentration consists of two basic components: 1) a multi-disciplinary set of courses and 2) a mentored research project. In addition, we plan to offer workshops to enhance important professional skills and a weekly seminar series to expose students to the full range of clinical research being conducted at all of the health sciences colleges at UIC or at neighboring institutions. These seminars will include seminars reporting on completed studies by established clinical investigators and work in progress in which students and their mentors will present. The Clinical Research concentration will culminate in mentored research to provide students the opportunity to work closely with established clinical investigators in applying the knowledge they had acquired. During the first year of the program all students will select a mentoring committee. The mentoring committee will help students to formulate a research proposal and will interact closely with them as they conduct their research. The committee will oversee the research which is intended to result in two products: a journal article of publishable quality and a grant proposal in NIH format for a professional development award or small grant application in which the mentored research would constitute the "Preliminary Studies" section.

Course Requirements

Students will take courses during the first year of the concentration, if taken on a full time basis (two years on a part-time basis). It is designed to provide students with an understanding of the analytical tools used by biostatisticians and epidemiologists and the application to health of the relevant concepts and theories in the social and behavioral sciences. Students will receive thirty three (32) credit hours for the courses, and sixteen (16) credit hours will be given for the thesis, for a total of 48 hours required for the program. The program will start with an intensive course in research design and grant writing which will provide the framework for program.

Table 1. Required Courses

Courses (credit hours)	**Courses Title**	**Semesters**
MS Core Courses		

EPID 403 (3 sh)	Introduction to Epidemiological Methods	Fall
BSTT 400 (3 sh)	Biostatistics I	Fall
IPHS 598 (16 sh)	Research-MS	Summer/Fall/Spring (2nd year)
Additional Courses Required for the Concentration		
EPID 406 (3 sh)	Epidemiologic Computing	Spring
BSTT 401(4 sh)	Biostatistics II	Spring
HPA 460 (2 sh)	Introduction into the Economics of Health and Healthcare	Fall
CHSC 447 (3 sh)	Survey Planning and Design	Fall
CHSC 401 (3 sh)	Behavioral Sciences and Public Health	
PMAd 573 (3 sh) cross-list as HPA 573 (3 sh)	Principles of Economic Evaluations of Health Care Interventions	Spring
MHPE 535 (3 sh) cross-list as HPA 535 (3 sh)	Translating Research into Clinical Practice	Spring
MHPE 512 (1 sh) cross-list as HPA 512 (1 sh)	Ethics in Clinical Research	Spring
MHPE 534 (2 sh) cross-list as HPA 534 (2 sh)	Research Design and Grant Writing	Fall
HPA 590 (1 sh)	Grant Writing	Spring (2nd year)
Elective chosen with an advisor (minimum of 1 hour)		

Mentored Research

The mentored research experience is the culminating educational experience for the Concentration in Clinical Research leading to the required master's thesis. Students will have to integrate the knowledge gained through the courses and workshops they had attended in the first year of the program in conducting the research project. Furthermore, their mentoring committees ***themselves*** will provide a model of clinical researchers working in multidisciplinary teams.

During the first year of the program, the Program Director and each student's mentoring committee, including their primary mentor, typically in their home department, will work with him/her to refine the research plan for the second year. At the beginning of the summer between the first and second year, the student will submit a research plan and identify the members of the proposed—potentially reformulated—mentoring committee for the review and approval of the Research Training Committee, and the Graduate College (see below for governance structure). The finalized research must be reviewed by the Research Training Committee and modified, if necessary, prior to the beginning of the second year. It is our intention through this iterative process to the appropriateness of the membership of each student's mentoring committee and of the research question they intend to study; once approved the mentoring committee will have the primary responsibility to assess the student's performance in their research. Students will meet with their committee chair monthly, or more frequently if needed. They will meet with other members as needed. Each mentoring committee must review the student's progress at the end of the Fall and Spring semesters and will grade the thesis at the end of the year. The research paper will be a publishable paper summarizing the mentored research the student conducted. "Publishable" in this context is intended to define the quality and style of the paper rather than a requirement that it actually be published at the time of program completion. Each student's thesis committee will assess whether the thesis is of "publishable" quality based on their experience as authors and reviewers. This will be specified in the student handbook. Students will also write a grant proposal following from their mentored research.

In addition, the students will attend a grant writing workshop monthly during the second year of the program. In the workshop, students will start by formulating a research idea that is an extension of their mentored research study. Trainees will learn how to draft effective sections of a grant proposal, starting with the "specific aims," through "background and significance," "preliminary studies," and "research design and methods." They will develop a budget, IRB submission, evaluate alternative and complementary therapies, review the issues raised by the inclusion of women, minorities and children in clinical trials, technology transfer, molecular diagnostics and animal models. The class will conclude with a mock study section analysis of the proposals generated by the class. The intention is that the grants written by the trainees will be submitted by the end of the training program for subsequent funding.